Biological Cybernetics

Communication and Control in Organisms and Automata

Nachrichtenübertragung, Nachrichtenverarbeitung, Steuerung und Regelung in Organismen und in Automaten

Editors

H. B. Barlow, Cambridge/Cambs. · O. Creutzfeldt, Göttingen
B. Hassenstein, Freiburg i. Br. · W. D. Keidel, Erlangen
I. Kohler, Innsbruck · K. Küpfmüller, Darmstadt
D. M. MacKay, Keele/Staffs. · H. Mittelstaedt, Seewiesen/Obb.
W. Reichardt, Tübingen (Editor-in-Chief) · W. A. Rosenblith, Cambridge/Mass.
J. F. Schouten, Eindhoven · D. Varjú, Tübingen

Volume 19 1975

Springer-Verlag Berlin Heidelberg New York

The copyright for all languages and countries, including the right to reproduce by photographic or other means is transferred to the publishers as soon as the manuscript is accepted and published by them.
The use of registered names, trade-marks, etc. in this journal does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.
Springer-Verlag Berlin-Heidelberg-New York. Printed in Germany by Brühlsche Universitätsdruckerei, Gießen
Copyright © by Springer-Verlag Berlin, Heidelberg 1975

Contents

M. Abeles, Lass, Y.: Transmission of Information by the Axon: II. The Channel Capacity 121

Bässler, U.: Zur Definition von Pro- und Metageotaxis bei Insekten (On the Definition of Pro- and Metageotaxis in Insects) 55

Bradley, G. W., v. Euler, C., Marttila, I., Roos, B.: A Model of the Central and Reflex Inhibition of Inspiration in the Cat 105

Chaplain, R. A.: Small-Signal Analysis of the Encoder Mechanism in the Lobster Stretch Receptor and the Frog and Cat Muscle Spindle 95

Cull, P.: Control of Switching Nets 137

Eggermont, J. J.: Cochlear Adaptation: A Theoretical Description 181

Geiger, G., Poggio, T.: The Orientation of Flies Towards Visual Patterns: On the Search for the Underlying Functional Interactions 39

De Luca, C. J.: A Model for a Motor Unit Train Recorded during Constant Force Isometric Contractions 159

Gemperlein, R., McCann, G. D.: A Study of the Response Properties of Retinula Cells of Flies Using Nonlinear Identification Theory 147

Ide, H., Obata, S.: Quantitative Measurement of Cutaneous Sensory Response to Vibration 131

Inbar, G. F.: Modulation of Dynamic Parameters of Muscle Reflex by Selective Activation of Its Gamma System 169

Krausz, H. I.: Identification of Nonlinear Systems Using Random Impulse Train Inputs 217

Lass, Y., Abeles, M.: Transmission of Information by the Axon: I. Noise and Memory in the Myelinated Nerve Fiber of the Frog 61

Leibovic, K. N.: Bleaching of Visual Pigment in Steady Illumination. A Model and a Derivation of Empirical Parameters 127

Leibovic, K. N., Kurtz, V. T.: Flash Photolysis of Vertebrate Photoreceptors. A Theoretical Analysis 83

Nass, M. M., Cooper, L. N.: A Theory for the Development of Feature Detecting Cells in Visual Cortex 1

Poggio, T.: On Optimal Nonlinear Associative Recall 201

Rubio, J. E., Holden, A. V.: The Response of a Model Neurone to a White Noise Input 191

Rudolfer, S. M., May, H. U.: On the Markov Properties of Interspike Times in the Cat Optic Tract 197

Shiavi, R., Negin, M.: Stochastic Properties of Motoneuron Activity and the Effect of Muscular Length 231

Škvařil, J.: Discharge Pattern of Reticular Neurons Subjected to Directed Mechanical Stimulation 117

Srinivasan, S. K., Sampath, G.: A Neuron Model with Pre-synaptic Deletion and Post-synaptic Accumulation, Decay and Threshold Behaviour 69

Stavenga, D. G., Beersma, D. G. M.: Formalism for the Neural Network of Visual Systems 75

Sugie, N., Yamane, S., Kaji, S., Yoshimura, M.: On the Characteristic of Nonlinear Spatial Summation Observed in the Lateral Geniculate Cells of Cats 211

Viviani, P., Berthoz, A.: Dynamics of the Head-Neck System in Response to Small Perturbations: Analysis in the Frequency Domain 19